Running head: LEARNING STRATEGIES

Learning Strategies for Adolescents with Mild Disabilities

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Abstract

Learning strategy instruction is an evidence-based practice for teaching adolescents with mild disabilities. However, researchers have not developed strategies for every content area or skill. Therefore, teachers need to be able develop strategies based on the needs of their students. This article reviews the process for developing and teaching learning strategies and highlights strategies developed by four preservice special education candidates for their middle and high school students with mild disabilities.

Learning Strategies for Adolescents with Mild Disabilities

Secondary special education teachers nation-wide balance many roles and responsibilities when teaching adolescents with disabilities (Bouck, 2005). They also seek ways to help their students become more independent learners. This is a challenge because many adolescents continue to need extensive support, given rigorous general education curriculum requirements and demands of postsecondary ventures such as employment, higher education, or the military. One approach for addressing these issues is to develop and teach students learning strategies.

Teaching learning strategies is especially appropriate for older students. First, secondary students are unique in that they only have a few more years remaining of their K-12 education. They also often experience a learning plateau, and thus the gap between their skills and curricular requirements continues to widen (Deshler & Schumaker, 2006). In addition, secondary students with disabilities typically: (a) have memory, information processing, and attention issues; (b) do not use efficient learning strategies; (c) use known strategies ineffectively; (d) seldom engage in self-regulation procedures; and (e) often perform several grade levels below their peers without disabilities in academic skills such as reading, writing, and math (Reid & Lienemann, 2006; Sabornie & deBettencourt, 2009). Unless secondary special educators address these unique characteristics with powerful instructional approaches, students may not make sufficient growth to meet Individualized Educational Program (IEP) goals or meet annual yearly progress under NCLB (No Child Left Behind). Further, they may be at a higher risk for dropping out of school and accepting and maintaining entry level jobs over their life time (Wehman, 2006).

What are learning strategies?

Friend and Bursuck (2012) defined learning strategies as principles, procedures, or rules for solving problems and independently completing tasks. Strategies can focus on big ideas, which are the concepts and principles that lead to the most efficient and broadest acquisition of knowledge from the curriculum (Lodato Wilson, 2007) or smaller steps or procedures to successfully complete an outcome. Strategies are also efficient ways to learn and remember a task or skill. Further, strategies activate students' learning by organizing the learning process, incorporating opportunities for students to practice and retrieve information, and providing explicit guides, formats, or scaffolds. In other words, learning strategies cue the student to do something, offer a way for students to remember steps to follow, and address a process that students find difficult (Lenz, Deshler, & Kissam, 2004). By doing so, learning strategies---often also referred to as cognitive strategy instruction (CSI) --- help students improve their learning and performance by supporting information processing. CSI embeds metacognitive or self-regulation strategies in structured routines that help students monitor and evaluate their learning task, which are necessary skills for academic success (Krawec & Montague, 2012). These components collectively help students learn how to learn, so they can be successful and independent learners.

Research Base

Researchers have validated the use of learning strategies for adolescents with disabilities through a well-supported research-base (Deshler & Schumaker, 2006; Reid & Lienemann, 2006; Sabornie & deBettencourt, 2009). For example, the meta-analysis by Swanson (1999) and Swanson and Sachs-Lee (2000) indicated that students taught using strategies showed the most improvement compared to other methods (Reid & Lienemann, 2006). Consequently, strategy

instruction received a "go for it" endorsement support from the Division of Learning Disabilities (DLD) and Division for Research (DR) of the Council for Exceptional Children (Krawec & Montague, 2012).

Probably the most well-known set of learning strategies for adolescents with learning disabilities (LD) has been developed over the last 30 years by researchers at the University of Kansas-Lawrence Institute for Learning. These are often referred to as the Strategic Instruction Model (SIM) which includes strategies in reading, writing, math, mnemonics, homework completion, test-taking, and other skills (Deshler & Schumaker, 2006). Each SIM strategy targets a specific skill students need to master to succeed in school--from late elementary through college or university--and in their careers (SIM: Unleash Student Potential, n.d.). For fidelity of instruction, teachers need to receive instruction in the strategy from a certified SIM trainer.

In addition to teaching published strategies, teachers can develop their own strategies based on common core standards or the needs of students as stated in their Individualized Education Programs (IEPs). Developing strategies is important because researchers have not developed strategies for every skill or content area, and students may need a strategy developed just for them (Conderman, Hedin, & Bresnahan, 2013). Therefore, this article provides a process teachers can consider when developing a strategy. This paper also includes four strategies preservice teacher candidates developed for middle and high school students with mild disabilities.

Instructional Steps

Several researchers (e.g., Deshler, Ellis, & Lenz, (1996) and Sabornie & deBettencourt, (2009) have recommended the following steps for teachers when developing a learning strategy:

1. Decide if the task can be broken into no more than seven sequenced steps

2. Determine the most efficient way to complete the task, being cognizant of each step

3. Write the most efficient process as ordered steps

4. Begin each strategy step with a verb to encourage student engagement

5. Develop examples (and if necessary nonexamples) of each step for students

6. Determine interesting instructional methods to use to teach each step (e.g., using video modeling, demonstrating, incorporating pictures, using verbal explanations)

7. If possible, develop a mnemonic for the strategy that helps students remember each ordered step

As noted above, one way for teachers to think about a strategy is to complete the task; being cognizant of the sequenced steps to follow when doing the task. In other words, teachers can complete a task analysis. This process helps teachers sequence and think about necessary prerequisite skills students need to complete each step independently. If students do not have the preskills, teachers can either provide an accommodation, (e.g., a cue card, technology, a visual, or an example) to support students or teach unknown preskills before teaching the whole strategy. After deciding to teach a strategy, the next step is to determine the instructional sequence. Table 1 provides six recommended instructional steps and examples for teaching strategies.

<Insert Table 1 about here>

As illustrated in Table 1, one unique feature of teaching a strategy is the think aloud used during the modeling step. Think alouds are verbal protocols, or the conscious disclosure of thought processes, that teachers use to help students monitor their learning and develop metacognitive strategies (Kymes, 2005). An effective think aloud provides students with the why and how of the steps of a process (Reid & Lienemann, 2006). Teachers should also be purposeful

by helping students note various settings to use the strategy to promote their generalization of the strategy.

To illustrate how secondary special educators can support student learning by developing and teaching learning strategies, the next section describes four strategies undergraduate preservice teacher candidates developed and taught in their clinical site using the steps described earlier. The clinical-based lesson plan assignment involved writing and teaching a strategy considered important by the candidate's cooperating teacher. Therefore, each candidate and his or her cooperating teacher discussed students' IEPs and strategies related to IEP goals and objectives. The lesson plan included: (a) relevant common core state standards associated with lesson outcomes; (b) a pretest composed of two parts: requesting students to list the steps of the strategy and requiring students to apply the strategy to a novel situation; (c) specific behavioral objectives; (d) teacher and student materials required for the lesson; (e) an attention grabber; (f) a rationale for teaching the strategy; (g) an overview of the strategy; (h) teacher modeling of the strategy; (i) guided practice which offered students opportunities to practice the skill with some teacher support; and (j) independent practice, culminating as the posttest.

These lesson plan components were developed and agreed upon by all methods professors in the teacher education program, satisfied state and national teacher accreditation requirements, and paralleled steps from established research from SIMS researchers. All lesson plans included a primary student objective (i.e., writing checks, completing application forms, calculating the final cost of an item given the price and the sales tax percent, and writing a summary of a given text) as well as a secondary student objective (i.e., writing the steps of the strategy).

Examples Of Teacher Candidate Developed Strategies

The PAYMENT Strategy

Joyce (all names are pseudonyms) developed the Payment strategy for three males and two eighth grade females with LD, emotional and behavioral disorders (EBD), or attention deficit hyperactivity disorder (AD/HD) who received life-skills mathematics instruction in a special education classroom. Joyce and her cooperating teacher knew that their students benefitted from systematic instruction in specific mathematics skills as well as an emphasis on conceptual understanding and application (Harniss, Carnine, Silbert, & Dixon, 2011).

Joyce reviewed the existing math curriculum, the internet, and other instructional materials and did not find a strategy for teaching check-writing, which was a goal for many students. Therefore, she used task analysis to think through the components of check-writing. She practiced the steps in order and asked herself how much she needed to break down the steps for her students. Based on her knowledge of her students, Joyce developed these steps:

P- Print the date

A-Add the person or company name

Y-Yield to check for accuracy

M-Mark down the amount you owe

E-Enter the amount you owe in word form

N-Note that the information you wrote was correct

T-Take your time to sign your name

Before she developed her lesson plan, she wrote and administered a two-part pretest to determine students' present level of performance, as shown in Figure 1.

<Insert Figure 1 about here>

The first part asked students to write steps of the Payment strategy, and the second part asked students to write a check. Joyce wanted to assess both skills as she knew that some students can list steps of a strategy, but they cannot complete the skill, while others can perform a skill but forget the steps. This was the case with some students in Joyce's class. On part one of the pretest, none of the students could write any of the steps of the Payment strategy. However, on part two of the pretest, student scores ranged from 40% to 100%. Two students received a 100% on part two. Responses from most students indicated that they needed reminders of the meaning of symbols and key words and how to write clearly. Combing scores from both pretest sections, the pretest class average was 33% which indicated that students could benefit from check-writing instruction.

The strategy was unique in that the mnemonic Payment involves making a payment, which often involves writing a check. Further, the Y and N steps caused students to stop and check their work for accuracy before submitting their completed check; thereby promoting metacognition and self-monitoring.

Joyce introduced the strategy by showing a humorous Youtube video clip about banks which captured student's attention and drew them into the lesson. She modeled the strategy using the Smart board. During guided practice, students practiced the strategy with many examples using laminated forms resembling actual checks. Joyce selected examples of items of interest to teenagers throughout the lesson. The authenticity of the checks, the relevance of the task for adolescents, and the systematic manner in which Joyce presented the strategy were likely factors which helped students improve their performance. On part one of the posttest, which asked students to list the seven steps of the Payment strategy, student raw scores ranged from 3 to 7

(one point awarded for each step) with an average of 66%. On part 2, which required students to actually write three checks, all students scored above 89%, with the class average of 97%.

The SWING Strategy

Marcella taught the Swing strategy to eight 14-20 year old high school students with LD and EBD. Students received instruction in a pull-out class focusing on transition skills where they were completing job applications. Marcella and her cooperating teacher believed that studying job applications was an appropriate avenue to infuse academic skills and discuss student needs, interests, strengths, and goals, all which are important transition outcomes (Wehmeyer, 2007). To help students learn the process of completing job applications, Marcella developed and taught the Swing strategy which included these steps:

S- Search the application to see what you need to complete

W- Write neatly in all of the blanks

I- Insert the appropriate information into the blanks

N- Notice if you made any errors

G- Give the application to the appropriate person

Marcella developed a two-part pretest. Part one tested students' knowledge of each step to the Swing strategy. Based on her knowledge of her students, Marcella developed five multiple choice questions to determine if students could recognize what each letter of the Swing strategy represented. Part two of the pretest required students to complete a job application. Students were given one point for correctly filling out each section of the application and zero points if the section was incorrect. On part one of the pretest, students scored an average of 29%. On part two of the pretest, students scored an average of 33%.

To gain students' interest as she began the lesson, Marcella displayed an example of a neatly completed application and a messy one and led the class in a discussion regarding which applicant would likely be interviewed. She modeled the strategy using applications from local businesses. During her think aloud, Marcella modeled how to double check the accuracy of information (see step N- Notice if you made any errors). She did this by having pertinent information such as her birthdate, previous employers, contact information, and references prewritten on cue cards and asking herself questions such as: What information is being asked? Where can I find that information? Did I write the correct information? For additional novelty, Marcella and her cooperating teacher role-played how to appropriately submit the competed application to the store manager. During guided practice, students practiced the strategy as a class using other local application forms as Marcella provided questions and statements such as, "What is the next step? What does W stand for? What do we do in the W step? Let's do that step together."

After sufficient practice, students completed the posttest. On part one of the posttest, all students scored 100% on the five questions asking them what each step of the Swing strategy represented. On part two of the pretest, students wrote answers to the job application with an average of 97% accuracy.

The SALES- TAX Strategy

After conferring with her cooperating teacher who recommended that Mia teach a functional math skill during the special education mathematics class, Mia developed the sales-tax strategy which she taught to six high school students with autism and mild intellectual disabilities. The objective of the lesson was for students to calculate the final cost of an item, given the price and the sales tax percent. Mia and her cooperating teacher realized that common

core state standards focus on preparing all students for their future and that explicit instruction involves stating what students will learn followed by a specific instructional sequence (Steedly, Dragoo, Arafeh, & Luke (2008).

Students were given a three-part teacher-made pre-test to assess their present level of performance. Part one assessed students' ability to write sales tax rates as a decimal. Part two assessed students' ability to determine the sales tax (in dollar and cents amounts) of an item given the cost of an item and the sales tax rate. Part three assessed students' knowledge of the four steps of the sales-tax strategy. On part one, students' scores ranged from 0% - 40%, and the class average was 7%. On part two, students' scores ranged from 0% - 75%, and the class average was 42%. On part three, students' scores ranged from 0% to 50%, and the class average was 29%.

Several features made Mia's lesson unique. First, she began the lesson by sharing an embarrassing life story about not having enough money to purchase T shirts because she had not considered the extra sales tax cost. This caught student's attention and created an authentic purpose for the lesson.

Second, because students used calculators for this strategy, Mia reviewed and pretaught relevant calculator skills. Students were familiar with some calculator functions from previous lessons, but she wanted students to be able to write various percentages as decimals. Therefore, she modeled (and students practiced) how to write percentage rates consisting of single digit whole numbers (e.g., 5%), double digit whole numbers (e.g., 20%), single digit numbers with a decimal (e.g., 3.5%), and double digit numbers with a decimal (e.g., 15.25%).

During the modeling step, Mia used a think aloud to demonstrate how to multiply the percent written as a decimal by the cost of various items of interest to her students. She prepared

a poster as a visual aid for frequent reference for herself and her students. The poster listed the

four strategy steps which included:

Write the sales tax percentage as a decimal

Multiply the cost of the item by the sales tax decimal rate

Keep only two numbers right of the decimal point

Add the sales amount to the cost of the item

During guided practice, using their calculators, students practiced: (a) writing different

percentage rates as decimals and (b) multiplying percents, written as decimals, by the cost of the

item to make their purchase. As shown in Figure 2, to scaffold instruction, Mia developed a cue

card for each student to use during guided practice. The cue card reminded students of the

strategy steps.

After her instruction, Mia distributed the posttest. Student scores for Part one showed an

increase from 0% - 40% to 0% - 100%. Some students over-generalized the rule for writing a

percent as a decimal. Some students added an extra zero unnecessarily, and then they moved the

decimal over three places to the left. One student refused to complete Part one. Student scores for

Part two of the posttest ranged between 0% - 100%. During guided practice and independent

practice, students used a cue card which was unavailable during the posttest which may account

for some of the low scores. Posttest observations indicated that students attempted to use the

strategy; however, they were not successful in generalizing the steps of the lesson to the posttest.

Student scores for Part three showed an increase from 0% - 50% on the pre-test to 25% - 100%

on the post-test. Four of six students scored 100% on this section of the posttest.

<Insert Figure 2 about here>

The BIRDS Strategy

Marcus completed his clinical experience in an 8th grade special education block language arts class consisting of five male and three females with LD, autism, and EBD. After conferring with his cooperating teacher, reviewing IEPs, and analyzing student errors on frequently administered silent and oral reading comprehension checks, Marcus realized that several students struggled with vocabulary, grammatical awareness, text structure, and metacognition of their own reading comprehension strategies (Venable, 2003). He also knew that the end goal of reading is to understand print, and that comprehension is an essential reading skill (National Institute of Child Health and Human Development, 2000).

Marcus developed and taught the BIRDS reading comprehension strategy to help students systematically organize a text, analyze the information, and understand its meaning. The steps included:

B- Break reading into smaller parts

I- Identify confusing words or phrases

R- Reword or rephrase to clarify

D- Decide if it makes sense

S- Summarize in your own words

Every student earned 0% on both sections of the pretest which required them to list the steps of the BIRDS strategy (part one) and show evidence of each step of the Birds strategy with a reading section of three continuous paragraphs of text written at students' independent reading level (part two). Students were allowed to use various tools such as a dictionary, thesaurus, and computer.

Marcus began the lesson having students discuss times when they did not understand something they read. Students volunteered numerous examples. Marcus then introduced the

strategy and emphasized that it would help them in many classes, including leisure reading. He

modeled, using a think aloud, the various steps of BIRDS using grade level text. He

demonstrated "being confused" after orally reading a paragraph; thus needing to break the

reading into smaller parts (step 1) such as analyzing each sentence for the source of confusion

and asking himself if he understood the sentence meaning. He showed how to reread each

sentence and identify confusing words or phrases (step 2) and check their meaning using

resources such as a dictionary, thesaurus, or glossary, or context clues. Marcus then replaced the

confusing word or phrase (step 3) with the known word or phrase and asked himself if the

sentence now made sense (step 4). He modeled how to ask for help in those situations when the

sentence still did not make sense. After he was able to replace the confusing word or phrase, he

then modeled how to summarize the confusing parts as well as the whole paragraph (step 5). Part

of his think aloud included the following:

> *The next step is **I** which stands for identify confusing parts. That means that I have to find parts that I don't understand and mark them in some way, so that I know that I was having problems. Let's see, how can I identify which words or phrase are confusing? I could write them down, underline them, or highlight them with a highlighter. I think I'm going to underline them and write them on a different piece of paper. That way, I'll have a lot more space to write what they mean in the next step. Let's see. What is Rego Park? That sounds like a place, but where is it? What does it mean to the story? I'll underline it and write it down. I'm not sure what it means by "taken their toll". Maybe I could ask Mr. Green what this means. I'll underline it and write it also. Why did the author use the word "survivor" when he talked about Mala? I'll have to figure that out when I get to the next step, but I'll underline it and write it on my paper. I don't understand anything about this sentence with the hangers, so I'll underline it and write it also. Alright, I think I have all of the parts that confuse me written down. Now I can move on to the next step.*

After modeling, guided instruction and independent practice, students completed their posttest.

The first section asked students to list the steps of the Birds strategy, and the second part asked

students to show evidence of using each step of the strategy. Specifically, students were

supposed to use brackets to break the reading into separate parts in the B step, underline

confusing words or sentences in the I step, write the meaning of confusing words in the R step,

write a short summary of how those meanings now made sense in the context of the sentence or

paragraph in the D step, and write a short summary of the whole selection for the S step. The

class average on the post test was 61%, indicating a need for additional reteaching.

Discussion

The purpose of this article was to describe the process that secondary special educators

(or in this case secondary special education preservice teachers) can follow to develop and teach

strategies to middle or high school students with mild disabilities. Teacher candidates developed

strategies based on student IEPs. They also taught the strategies using an evidence-based

instructional sequence. Candidates were successful in reviewing student IEPs to identify needed

skills, discussing their ideas with their cooperating teacher, informally assessing students

regarding their knowledge and use of a strategy, teaching the strategy, and administering a

posttest to assess student use with the strategy. This assignment is one of the clinical-based

activities candidates complete as part of their junior block which emphasizes curriculum and

methods associated with secondary special education. Including this assignment in the block was

purposeful as few educators are provided with professional development in strategy instruction

approaches beyond a brief exposure to strategy instruction (Reid & Lienemann, 2006).

Despite its advantages, strategy instruction is not without some challenges. As noted in

the description of teacher candidate's lessons, some students did not make significant growth as

noted on posttest scores. Perhaps one reason for this is that teacher candidates were given a

limited time to teach their strategy which most likely impacted posttest results. Strategy

instruction typically takes longer because of the steps involved and the thoroughness needed to

teach the strategy to mastery. Students need to: a) understand the purpose of the strategy; b)

know how, when, and why to use the strategy; c) think of ways to remember the strategy steps; d) hear and see the strategy modeled several times; and e) be assessed on their use of the strategy (Lenz, Deshler, & Kissam, 2004). Teacher candidates included these steps in their instruction, but they taught their strategy in just two or three days due to scheduling demands. Some students likely needed more time to process the strategy and remember the steps. Faculty members are making appropriate changes, so future candidates will have more time to teach their strategy. Also, candidates did not allow students to use their cue cards or other supports during the posttest which also likely impacted results. Given the abbreviated time candidates had to teach their strategy, perhaps they should have allowed students to use the cue cards for part two of the posttest. Candidates were hopeful that their cooperating teachers would continue to reteach and review the strategy and use the cue cards and posters with students even after they were no longer at their clinical site.

While reflecting upon the assignment, candidates indicated that they have a better understanding and appreciation for the process teachers take in planning a learning strategy, especially the think aloud component of the modeling step. Many candidates were surprised at how explicit they needed to be when introducing each strategy step. They also commented on the importance of analyzing student pretest errors to inform subsequent instruction. Last, candidates commented that the steps in developing and teaching a strategy represent good instruction, whether or not a strategy is involved.

Concluding Thoughts

Secondary special educators often feel pulled in many directions regarding their instructional responsibilities. One approach with considerable research support is learning strategies, which are efficient ways to complete a task.

After reviewing IEPs to determine the content or skill, teachers can select and teach a strategy from the professional literature or design their own strategy by conducting a task analysis. In either case, teachers can incorporate evidence-based instructional steps within their strategy-based lessons that: (a) begin with assessing students' existing knowledge and skill with the strategy, (b) emphasize modeling the strategy with a think aloud, (c) allow for removing scaffolds, such as cue cards, until students can complete the strategy independently, and (d) conclude with a posttest. Preservice teacher candidates, as well as experienced teachers, can infuse strategy instruction using evidence-based instructional steps to help create independent learners, which is a desired outcome for all students.

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Table 1

Steps for Teaching a Strategy

Step	Explanation of the Step	Examples
Pretest	Administer an informal assessment to determine the student's current familiarity with the strategy *and* his or her ability to apply the strategy	Interview the student Use the Know column of a K-W-L chart (Ogle, 1989) Develop a pretest Administer an anticipatory guide (Kozen, Murray, & Windell, 2006) Provide a blank graphic organizer for the student to complete
Describe the strategy	Provide a rationale for learning the strategy, share its importance, describe the benefits, and provide an overview of the strategy	Share how past students have benefitted from the strategy Explain how you have used the strategy Emphasize that the strategy can be used in many situations
Model the strategy	Use a *think aloud* to model how to use cognitive, metacognitive, or self-monitoring procedures (e.g., What do I do first? What is the next step in the strategy? Have I completed this step correctly? Should I check this answer once again?) Include *self-affirmations* in the think aloud (e.g., I can do this, I've got this step, I did a good job)	Provide a video of you or others completing the strategy, pausing as needed, to discuss the step shown Demonstrate the strategy in real time Display pictures of the strategy steps Write a "script" that details strategy steps
Provide guided practice	Practice the strategy with students multiple times using various examples. Gradually remove support, so students assume more responsibility	Have students use whiteboards, the Smart board, or response cards to show their responses to practice items Allow students to work with a partner but with teacher support, a cue card, or other visuals/supports Take turns with each student performing the next step with teacher guidance
Provide independent practice (or posttest)	Provide situations or examples in which students complete the strategy on their own	Interview the student Finish the L step in the K-W-L chart Administer a post test Have the student teach the strategy Allow the student to demonstrate, make a video, or do an individual "check out" Have students describe the ordered steps without looking at their cue card
Promote strategy generalization	Remind students of situations in which they can apply the strategy, and reinforce transfer of the strategy to novel situations	With students, brainstorm situations to use the strategy Assign homework requiring strategy use in a new situation Have students report their use of the strategy

Figure 1. Pretest for the Payment Strategy

Pretest Part 1

Directions: When we learn to write a check, we might use the PAYMENT strategy. What do the letters P, A, Y, M, E, N, T stand for in this strategy?

P:_____

A:_____

Y:_____

M:_____

E:_____

N:_____

T:_____

Pre Test Part 2

Directions: In the sample scenario below, insert your name in the blanks. Then read through the scenario. Once you read through it, write your blank check as best as you can.

Greta Gernsner needed to buy a cap and gown for graduation. The total for both of these items was $32.50 (thirty-two dollars and 50/100). Greta owes this money to McKnobb High School by April 16th, but today's date is March 18th, 2014.

Figure 2. Cue Card for Sales Tax Strategy

Cost of items

Sales tax rate [%] Write % as a decimal (% → .)
 (Move decimal { . } 2 places to the left { })

Multiply { X } for sales tax

Sales tax amount – Keep only two numbers
right of the decimal (12.3456 → 12.34)

Bring down cost of items

Bring down sales tax amount

Add (+) for total amount due